IN THE CLAIMS

Please amend the claims as follows:

1. (original): A method for deriving an estimate of a wireless channel in a wireless communication system, comprising:

obtaining an intermediate vector derived based on K sub-vectors of a vector for a first channel estimate and at least two discrete Fourier transform (DFT) sub-matrices for a DFT matrix, wherein the DFT matrix corresponds to the vector for the first channel estimate and K is an integer greater than one;

obtaining an intermediate matrix for the DFT matrix; and

deriving a second channel estimate based on the intermediate vector and the intermediate matrix.

2. (original): The method of claim 1, wherein the first channel estimate is a channel frequency response estimate and the second channel estimate is a channel impulse response estimate for the wireless channel.

3. (original): The method of claim 1, wherein the intermediate vector is based on

$$\underline{\mathbf{B}} = \sum_{k=1}^{\mathrm{K}} \underline{\mathbf{W}}_k^H \hat{\underline{\mathbf{H}}}_k \quad ,$$

where $\underline{\mathbf{B}}$ is the intermediate vector,

$\underline{\mathbf{W}}_k$ is a k-th DFT sub-matrix among K DFT sub-matrices of the DFT matrix,

$\hat{\underline{\mathbf{H}}}_k$ is a k-th sub-vector among the K sub-vectors for the first channel estimate, and

"^{H}" is a conjugate transpose.

4. (original): The method of claim 1, wherein the at least two DFT sub-matrices include K DFT sub-matrices corresponding to the K sub-vectors, and wherein the obtaining the intermediate vector includes

performing a matrix multiply of each of the K sub-vectors with a corresponding one of the K DFT sub-matrices to obtain a corresponding intermediate sub-vector, and

accumulating K intermediate sub-vectors, obtained from the matrix multiply of the K sub-vectors with the K DFT sub-matrices, to obtain the intermediate vector.

5. (original): The method of claim 1, wherein the obtaining the intermediate vector includes

computing discrete Fourier transforms of a first matrix, formed based on the vector for the first channel estimate, to provide a second matrix, and

computing inner products between columns of a base DFT sub-matrix and rows of the second matrix to obtain the intermediate vector.

6. (original): The method of claim 5, wherein the DFT of the first matrix is computed using a radix-2 fast Fourier transform.

7. (original): The method of claim 5, wherein the DFT of the first matrix is computed using a radix-4 fast Fourier transform.

8. (original): The method of claim 1, wherein the intermediate matrix is based on

$$\underline{\mathbf{A}} = \left(\sum_{k=1}^{K} \underline{\mathbf{W}}_k^H \underline{\mathbf{W}}_k \right)^{-1} ,$$

where $\underline{\mathbf{A}}$ is the intermediate matrix,

$\underline{\mathbf{W}}_k$ is a k-th DFT sub-matrix among K DFT sub-matrices of the DFT matrix, and

"^{H}" is a conjugate transpose.

9. (original): The method of claim 1, wherein the intermediate matrix is pre-computed.

10. (original): The method of claim 1, wherein the second channel estimate is a least square estimate based on the first channel estimate, and wherein the intermediate vector and the intermediate matrix are two parts of the least square estimate.

11. (original): The method of claim 2, further comprising:

deriving an enhanced channel frequency response estimate based on the channel impulse response estimate.

12. (original): The method of claim 11, wherein the channel frequency response estimate covers a first group of subbands and the enhanced channel frequency response estimate covers a second group of subbands.

13. (original): The method of claim 12, wherein the first group includes a subset of the subbands in the second group.

14. (original): The method of claim 1, wherein the wireless communication system is an orthogonal frequency division multiplexing (OFDM) communication system.

15. (original): A method for deriving a channel estimate in a wireless communication system, comprising:

obtaining an intermediate vector derived based on K sub-vectors of a vector for a first channel estimate and K discrete Fourier transform (DFT) sub-matrices of a DFT matrix, where K is an integer greater than one;

obtaining an intermediate matrix derived based on the K DFT sub-matrices; and

deriving a second channel estimate based on the intermediate vector and the intermediate matrix.

16. (currently amended): A method for deriving an estimate of a wireless channel in an orthogonal frequency division multiplexing (OFDM) communication system, comprising:

forming a first matrix for an initial frequency response estimate of the wireless channel;

computing discrete Fourier transforms (DFTs) of the first matrix to obtain a second matrix;

computing inner products between a base DFT sub-matrix and the second matrix to obtain an intermediate vector;

obtaining an intermediate matrix derived for a DFT matrix for the initial frequency response estimate; and

deriving a channel impulse response estimate based on the intermediate vector and the intermediate matrix.

17. (original): The method of claim 16, further comprising:

deriving an enhanced frequency response estimate for the wireless channel based on the channel impulse response estimate.

18. (original): A memory communicatively coupled to a digital signal processing device (DSPD) capable of interpreting digital information to:

obtain an intermediate vector derived based on K sub-vectors of a vector for a first channel estimate and at least two discrete Fourier transform (DFT) sub-matrices for a DFT matrix, wherein the DFT matrix corresponds to the vector for the first channel estimate and K is an integer greater than one;

obtain an intermediate matrix for the DFT matrix; and

derive a second channel estimate based on the intermediate vector and the intermediate matrix.

19. (currently amended): An apparatus operable to derive an estimate of a wireless channel, comprising:

means for obtaining an intermediate vector derived based on K sub-vectors of a vector for a first channel estimate and at least two discrete Fourier transform (DFT) sub-matrices for a DFT matrix, wherein the DFT matrix corresponds to the vector for the first channel estimate and K is an integer greater than one;

means for obtaining an intermediate matrix for the DFT matrix; and

means for deriving a second channel estimate based on the intermediate vector and the intermediate matrix.

20. (original): The apparatus of claim 19, wherein the means for obtaining the intermediate vector includes

means for computing a DFT of a first matrix, formed based on the vector for the first channel estimate, to provide a second matrix, and

means for computing inner products between columns of a base DFT sub-matrix and rows of the second matrix to obtain the intermediate vector.

21. (original): The apparatus of claim 19, wherein the wherein the first channel estimate is a channel frequency response estimate and the second channel estimate is a least square channel impulse response estimate for the wireless channel.

22. (currently amended): A device in a wireless communication system, comprising:

a demodulator operative to receive a pilot transmission on a group of designated subbands; and

a processor operative to

obtain a first channel estimate for the group of designated subbands based on the received pilot transmission,

obtain an intermediate vector derived based on K sub-vectors of a vector for the first channel estimate and at least two discrete Fourier transform (DFT) sub-matrices for a DFT matrix, wherein the DFT matrix corresponds to the vector for the first channel estimate and K is an integer greater than one,

obtain an intermediate matrix for the DFT matrix, and

derive a second channel estimate based on the intermediate vector and the intermediate matrix.

23. (original): The device of claim 22, wherein the processor is further operative to

compute discrete Fourier transforms of a first matrix, formed based on the vector for the first channel estimate, to provide a second matrix, and

compute inner products between columns of a base DFT sub-matrix and rows of the second matrix to obtain the intermediate vector.

24. (original): The device of claim 22, wherein the first channel estimate is a channel frequency response estimate and the second channel estimate is a channel impulse response estimate, and wherein the processor is further operative to

derive an enhanced channel frequency response estimate based on the channel impulse response estimate.